



## Applied Materials Leads the Advancement of RTP with New XEplus System

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RTP XEplus(TM) Centura(R) Doubles Temperature Ramp Rate, Provides Precise Temperature Control to Enable High Throughput Ultra-Shallow Transistor Junction Formation

Applied Materials, Inc. announced the RTP XEplus Centura, a new rapid thermal processing (RTP) system that delivers the accelerated temperature ramp rates and precise temperature control required to optimize the electrical performance of sub-0.18 micron device structures. Extending the industry-leading capabilities of the company's RTP XE Centura, the new system enables the formation of ultra-shallow transistor junctions as well as other advanced applications such as critical thin gate dielectrics.

At sub-0.18 micron design rules, virtually all chip makers are expected to design transistors with ultra-shallow (less than 600 angstrom) junctions to increase device performance. The RTP XEplus uniquely addresses the major challenges in creating these junctions by delivering a precisely controlled, uniform temperature ramp rate of up to 150 degrees C per second. Enabling a critical "spike anneal," the XEplus exposes the wafer to the target temperature for less than one second before cooling, thus maximizing dopant activation while minimizing the diffusion of dopants into unwanted areas of the device.

"Customers are excited about this new capability, since it provides innovative, enabling technology to meet their future design strategies," said Dr. Chris Gronet, vice president of Applied Materials' Thermal Processing Organization. "In addition to supporting next-generation applications such as ultra-shallow junctions and thin gate dielectrics, the RTP XEplus also sets new standards in process uniformity and reduced cost of ownership. For example, maximum system throughput has been increased to more than 110 wafers per hour."

To meet stringent control requirements for sub-0.18 micron process technology, the XEplus features unmatched temperature control capability of 3 degrees C, 3 sigma -- independent of wafer emissivity. Key to maintaining uniformity is the system's unique, closed-loop, multi-point temperature control which monitors temperature variations across the wafer in real time to constantly adjust the system's patented Honeycomb Lamp Array.

The process results of the XEplus can be efficiently transferred from system to system using the company's innovative TempMatch(TM) calibration tool. The TempMatch tool provides temperature matching capability to better than +/-1.75 degrees C between chambers and systems without recipe modification. New OptiZone(TM) software featured on the RTP XEplus automatically fine-tunes the system for optimal process uniformity, thus reducing the number of wafers needed for system setup or requalification and lowering system cost.

According to research firms Dataquest and VLSI Research, Applied Materials has been the industry's leading supplier of RTP systems for the last two years, with more than 50 percent market share in 1997. Introduced in mid-1995, the RTP Centura quickly captured the market with its unique temperature measurement and control capability. Dataquest estimates the RTP market in 1998 at \$251 million and anticipates it to grow to more than \$688 million by 2003.

The RTP XEplus Centura system will begin shipping in October. The XEplus enhancements will be available as a new system or as an upgrade to Applied Materials RTP XE Centura chambers.

Applied Materials, Inc. is a Fortune 500 global growth company and the world's largest supplier of wafer fabrication systems and services to the global semiconductor industry. Applied Materials is traded on the Nasdaq National Market System under the symbol, 'AMAT.' Applied Materials' Web site is <http://www.AppliedMaterials.com>.